

## ABSTRACT

The present invention relates to an *in vivo*-assay to screen for anti-proliferative drugs, the assay comprising the steps of:

- 5 (a) contacting cells of a primary cell culture or of an established cell line with a candidate substance,
- (b) subsequently or concomitantly with a candidate substance, contacting the cells with a growth factor,
- (c) processing the cells for immunofluorescence staining to detect APPL1 and APPL2 using  
10 an anti-APPL1 and/or 2 antibody, or alternatively using GFP-tagged APPL proteins stably or transiently expressed by the cells via transfection,
- (d) assessing the degree of colocalisation of APPL1 and/or 2 and the growth factor, the solubilisation of APPL1 and/or 2 and their translocation to the nucleus,
- (e) repeating steps (b) to (d) with cells not previously treated with the candidate substance,  
15 and
- (f) comparing the degree of colocalisation of APPL1 and/or 2 and the growth factor, the solubilisation of APPL1 and/or 2 and their translocation to the nucleus between the cells not previously treated with the candidate substance (untreated cells) and cells treated with the candidate substance (treated cells),
- 20 wherein an altered degree of colocalisation of APPL1 and/or 2 and the growth factor, an altered solubilisation of APPL1 and/or 2 and/or their altered translocation to the nucleus in the treated vs. the untreated cells identifies the candidate substance as an anti-proliferative drug.